CLAIMS

What is claimed is:

1. An apparatus comprising:

a reticle unit having formed thereon two or more alignment mark patterns corresponding to a desired alignment mark;

a light source capable transmitting light through the alignment mark patterns of the reticle; and

two or more objectives each objective positioned to receive light transmitted through one of the alignment mark patterns, each objective having an effective imaging area approximately equal to the area of the desired alignment mark.

2. The apparatus of claim 1 wherein the reticle unit is a single reticle.

3. The apparatus of claim 2 wherein the effective imaging area of each objective is less than 1 mm^2.

4. The apparatus of claim 3 wherein the light source is a broadband light source.

5. The apparatus of claim 2 wherein the light source includes a plurality of distinct light sources each corresponding to one of the objectives.

6. The apparatus of claim 1 wherein the alignment mark patterns are positioned on the reticle unit within 5 nm of a desired position.

7. The apparatus of claim 5 wherein light from each of the distinct light sources is transmitted to a corresponding objective via an optic fiber.

8. The apparatus of claim 2 wherein the reticle is a quartz wafer.

9. The apparatus of claim 2 wherein the light source has a uniformity based upon a resolution required to image the desired alignment mark.

10. The apparatus of claim 9 wherein the resolution required to image the desired alignment mark is approximately 8 μm.

11. A method comprising;

depositing a layer of photoresist upon a wafer, the wafer having an orientation indicator;

placing the wafer in a desired position, the desired position determined by the orientation indicator; and

imaging alignment marks on the wafer by exposing the photoresist with a light source directed through a plurality of alignment mark patterns formed within a reticle unit.

12. The method of claim 11 wherein the reticle unit is a single reticle.

13. The method of claim 12 wherein the light source is a broadband light source.

14. The method of claim 12 wherein the alignment mark patterns are positioned on the reticle unit within 5 nm of a desired position.

15. The method of claim 12 wherein the reticle is a quartz wafer.

16. The method of claim 12 wherein the light source has a uniformity based upon a resolution required to image the alignment marks.

17. The method of claim 16 wherein the resolution required to image the desired alignment mark is approximately 8 μm.

18. A method comprising:

determining a position for each of two or more alignment marks; and

creating a reticle having two or more alignment mark patterns formed thereon, each alignment mark pattern formed on the reticle in a position corresponding to a determined position for an alignment mark.

19. The method of claim 18 further comprising:

measuring the position of the alignment mark patterns to determine a reticle offset.

20. The method of claim 19 wherein the reticle offset is less than 5 nm.

21. The method of claim 20 wherein the reticle is quartz wafer having a chrome layer deposited thereon, and wherein the alignment mark patterns are formed by etching the chrome layer.

22. A method comprising:

polishing a front side of a wafer and a backside of the wafer;

applying a protective layer to both the front side of the wafer and the backside of the wafer;

depositing a photoresist layer on the back side of the wafer; and

imaging alignment marks on the backside of the wafer using a reduction lithography process.

23. The method of claim 22 further comprising:

stripping the photoresist from the backside of the wafer;

stripping the protective layer from both the front side of the wafer and the back side of the wafer; and

imaging products on the front side of the wafer.

24. The method of claim 22 wherein the protective layer comprises an oxide layer.

25. The method of claim 22 wherein imaging alignment marks on the back side of the wafer is accomplished using an apparatus including a reticle unit having formed thereon two or more alignment mark patterns corresponding to a desired alignment mark, a light source capable transmitting light through the alignment mark patterns of the reticle, and two or more objectives each objective positioned to receive light transmitted through one of the alignment mark patterns, each objective having an effective imaging area approximately equal to the area of the desired alignment mark.

26. The method of claim 25 wherein the reticle unit is a single reticle.

27. The method of claim 26 wherein the effective imaging area of each objective is less than 1 mm^2.

28. The method of claim 27 wherein the light source is a broadband light source.

29. The method of claim 26 wherein the light source includes a plurality of distinct light sources each corresponding to one of the objectives.

30. The method of claim 25 wherein the alignment mark patterns are positioned on the reticle unit within 5 nm of a desired position.

31. The method of claim 29 wherein light from each of the distinct light sources is transmitted to a corresponding objective via an optic fiber.

32. The method of claim 26 wherein the reticle is a quartz wafer.

33. The method of claim 26 wherein the light source has a uniformity based upon a resolution required to image the desired alignment mark.

34. The method of claim 33 wherein the resolution required to image the desired alignment mark is approximately 8 μm.